

**MODERN DRILLING PRACTICE: A
TREATISE ON THE USE OF
VARIOUS TYPES OF SINGLE- AND
MULTIPLE-SPINDLE DRILLING
MACHINES**

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Modern Drilling Practice: A Treatise on the Use of Various Types of Single- and Multiple-Spindle Drilling Machines by Edward K. Hammond

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EDWARD K. HAMMOND

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MODERN DRILLING PRACTICE

A TREATISE ON THE USE OF VARIOUS TYPES OF SINGLE- AND MULTIPLE-SPINDLE DRILLING MACHINES, INCLUDING THEIR APPLICATION TO STANDARD AND SPECIAL OPERATIONS, THE RELATION OF SPEEDS AND FEEDS TO INTENSIVE PRODUCTION, AND THE DIFFERENT TYPES OF TOOLS AND FIXTURES UTILIZED IN PROGRESSIVE MACHINE SHOPS FOR INCREASING THE RANGE AND EFFICIENCY OF MACHINES OF THIS CLASS

EDWARD K. HAMMOND

ASSOCIATE EDITOR OF MACHINERY
JOINT AUTHOR OF "SHOP MANAGEMENT AND SYSTEMS"

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PREFACE

DURING recent years, a number of important changes have been made in methods of drilling holes in the parts of manufactured products. Noteworthy among these are the great increase in the speed at which twist drills are driven, the application of various types of universal or special multiple-spindle drilling machines or auxiliary drill heads, and the successful employment of semi-automatic drilling machines. All of these developments in drilling practice have been introduced with the view of increasing rates of production; and, in preparing the subject matter of this book, the author's object has been the same. The methods discussed are those which have been thoroughly tried out under actual manufacturing conditions, so that their practicability has been conclusively demonstrated. As a result, men who are responsible for the selection of methods of performing machining operations can decide upon the application of any of these suggestions for handling their own work with complete assurance that the resulting benefits are likely to be as great as in the case of other plants where substantial economies have been effected.

Probably it is safe to say that there is no class of cutting tool used in machine shops which receives as little consideration as the twist drill. This is largely due to the fact that drills can be bought ready for use in practically any size. As a result, the mechanic is likely to assume that the twist drill manufacturer has produced tools which are not only ready for use, but which are capable of remaining in good condition with very little attention. As a matter of fact, the proper grinding of a twist drill is of the utmost importance, and unless the drill is ground to the proper shape, its cutting efficiency is certain to be very seriously impaired. Realizing the importance of proper drill grinding, a comprehensive discussion has been presented of the

theoretical considerations which must be fulfilled in order to grind a drill and maintain the point of such a shape that it will have the same cutting efficiency as a new drill of the same size. Drills may be ground on either a special drill grinding machine or on an ordinary tool grinder, and information is given concerning the proper method of procedure in both cases.

All mechanics are familiar with the various types of drilling machines which are extensively used in machine shops. Bearing this fact in mind, it was felt that nothing beyond a brief description of the essential features of each type of machine would be of practical value. After this preliminary discussion of machine design, examples of good practice in operating each type of machine are illustrated and described. In this connection, complete information is given concerning the material, the size of holes being drilled, the speed and feed at which the operation is performed, and the rate of production which is obtained. The examples selected show operations which are conducted under conditions approximating maximum output and, as a result, should prove of value in suggesting conditions under which a new job may be successfully handled. No attempt has been made to take up the subject of jigs and fixtures beyond explaining certain fundamental points in their design and the essential features of equipments used in performing the particular operations which are described. The reason is that this subject has been considered of sufficient importance to warrant its treatment in a separate volume in which a full discussion is presented of various principles of jig and fixture design.

THE AUTHOR

NEW YORK, May, 1919.

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